

REMARKS

These Remarks are presented in response to the Office Action. Claims 1-21 remain pending in this application.

Reconsideration of this application is respectfully requested in view of the following remarks. For the convenience and reference of the Examiner, the remarks of the Applicant are presented in the order in which the corresponding issues were raised in the Office Action.

I. General considerations

In connection with the matters contemplated herein, Applicant respectfully notes that the following discussion should not be construed to constitute an exhaustive enumeration of the distinctions between the claims of the present application and the references cited by the Examiner. Instead, such distinctions are presented solely by way of example. Consistent with the foregoing, the discussion herein is not intended, and should not be construed, to prejudice or foreclose contemporaneous or future consideration, by the Applicant, of additional or alternative distinctions between the claims of the present application and the references cited by the Examiner, and/or the merits of additional or alternative arguments.

Moreover, Applicant notes that the remarks presented herein have been made merely to clarify the claimed embodiments from elements purported by the Examiner to be taught by the cited references. Such remarks, or a lack of remarks, are not intended to constitute, and should not be construed as, an acquiescence, on the part of the Applicant: as to the purported teachings or prior art status of the cited references; as to the characterization of the cited references advanced by the Examiner; or as to any other assertions, allegations or characterizations made by the Examiner in this case. Applicant reserves the right to challenge the purported teaching and prior art status of the cited references at any appropriate time.

II. Claim rejections

a. rejection of claim 8 under 35 U.S.C. §102(b)

Applicant respectfully notes that a claim is anticipated under 35 U.S.C. § 102(a), (b), or (e) only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. Further, the identical invention must be shown in as complete detail as is contained in the

claim. Finally, the elements must be arranged as required by the claim. *See* Manual of Patent Examining Procedure (“M.P.E.P.”) § 2131.

The Examiner has rejected independent claim 8 under 35 U.S.C. § 102(b) as being anticipated by United States Statutory Invention Registration No. H667 to *Bedair et al* (“*Bedair*”). Applicant respectfully disagrees with the contentions of the Examiner however and submits that, for at least the reasons presented herein, the rejection should be withdrawn.

In rejecting claim 8, the Examiner has alleged that “*Bedair* disclose in Fig. 2 a p-doped GaAs(1-x)Sbx tunnel junction layer 203 (col. 7, l.16-17).” However, a review of the *Bedair* passage cited by the Examiner indicates that the plain language of such passage belies the characterization advanced by the Examiner. Particularly, that passage states “Or, using a GaAsSb bottom cell and an AlGaAsSb top cell, a GaAsSb patterned tunnel junction could be used.” Col. 7, lines 15-17. *Emphasis added*. As the foregoing makes clear, the passage of *Bedair* cited by the Examiner in support of the rejection makes no reference to the specific claimed relation of As (1-x) to Sb (x) in a tunnel junction, much less to a “tunnel junction having a p-doped GaAs(1-x)Sbx layer” as recited in claim 8. *Emphasis added*. Moreover, Figure 2 of *Bedair* fails to disclose Sb in the “tunnel junction 203.” Rather, inspection of that Figure indicates that a tunnel junction of GaAs is disclosed. Thus, the Examiner has not established that the identical invention is shown in *Bedair* in as complete detail as is contained in the claim.

In light of the foregoing, Applicant submits that the Examiner has failed to establish that *Bedair* anticipates claim 8, and the rejection of claim 8 should accordingly be withdrawn.

b. rejection of claims 1-7 and 9-12 under 35 U.S.C. § 103(a)

Applicant respectfully notes at the outset that in order to establish a *prima facie* case of obviousness, it is the burden of the Examiner to demonstrate that three criteria are met: first, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings; second, there must be a reasonable expectation of success; and third, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *See* M.P.E.P. § 2143.

The Examiner has rejected claims 1-7 and 9-12 under 35 U.S.C. § 103(a) as being unpatentable over *Bedair* in view of *McDermott et al.*, *Growth and doping of a GaAsSb via metalorganic chemical vapor deposition for InP heterojunction bipolar transistors*, Appl. Phys. Lett., Vol. 68, No. 10, 4 March 1996) (“*McDermott*”). Among other things, the Examiner has asserted that “with respect to claims 1-2, *Bedair* disclose in Fig. 2 a tunnel junction including GaAs(1-x)Sbx 203 (col. 7, l. 16-17).”

Similar to claim 8 discussed above, claims 1-7 each require, among other things, “a tunnel junction including GaAs_(1-x)Sb_x.” *Emphasis added.* As noted in that discussion of claim 8 however, the Examiner has failed to establish that *Bedair* teaches or suggests the particular claimed relation of As (1-x) to Sb (x) in a tunnel junction. Inasmuch as the rejection of claims 1-7 relies on the inaccurate characterization of *Bedair* advanced by the Examiner, that rejection lacks an adequate foundation. Particularly, even if *Bedair* and *McDermott* are combined in the purportedly obvious fashion, the resulting combination nonetheless fails to include all the limitations of claims 1-7.

Moreover, it is not at all clear that one of skill in the art would be motivated to combine the purported reference teachings, in view of the disparate technologies represented by the cited references. Particularly, *McDermott* is directed to bipolar transistors (see Title) while *Bedair* is concerned with solar cells (see Abstract). Further, the Examiner has not established that there is a reasonable expectation that the purportedly obvious combination of aspects of the *McDermott* bipolar transistor with aspects of the *Bedair* solar cells would even prove successful.

Regarding claims 9-12, those claims require, by virtue of their dependence from independent claim 8, a “tunnel junction having a p-doped GaAs(1-x)Sb_x layer.” As noted above in connection with the discussion of claim 8 however, the Examiner has failed to establish that any of the cited references teach or suggest this limitation. Thus, even if *Bedair* and *McDermott* are combined in the purportedly obvious fashion, the resulting combination nonetheless fails to include all the limitations of claims 9-12.

For at least the foregoing reasons, Applicant submits that the Examiner has failed to establish a *prima facie* case of obviousness with respect to claims 1-7, and with respect to claims 9-12, and such rejection should accordingly be withdrawn.

c. rejection of claims 13-15, 18 and 21 under 35 U.S.C. § 103(a)

The Examiner has rejected claims 13-15, 18 and 21 under 35 U.S.C. § 103 as being unpatentable over *Bedair* in view of what the Examiner has characterized as “admitted prior art.” The Examiner has asserted that “with respect to claims 13 and 18, *Bedair* disclose in Fig. 2 a tunnel junction including GaAs(1-x)Sb_x 203 (col. 7, l. 16-17).”

Similar to independent claims 1 and 8 discussed above, independent claim 13 and corresponding dependent claims 14-15, 18 and 21, each require, among other things, “a tunnel junction [that] includes GaAs_(1-x)Sb_x.” As discussed above in connection with claims 1 and 8 however, the Examiner has failed to establish that *Bedair* teaches or suggests the particular claimed relation of As (1-x) to Sb (x) in a tunnel junction. Inasmuch as the rejection of claims 13-15, 18 and 21 relies on the inaccurate characterization of

Bedair advanced by the Examiner, that rejection lacks an adequate foundation. Particularly, even if *Bedair* and the purported “admitted prior art” are combined in the allegedly obvious fashion, the resulting combination nonetheless fails to include all the limitations of claims 13-15, 18 and 21.

Moreover, it is not at all clear that one of skill in the art would be motivated to combine the purported reference teachings, in view of the disparate technologies represented by the cited references. Particularly, the purported “admitted prior art” is concerned with vertical cavity surface emitting lasers, while *Bedair* is concerned with solar cells (see Abstract). Further, the Examiner has not established that there is a reasonable expectation that the purportedly obvious combination of aspects of the aforementioned VCSEL and *Bedair* solar cell would even prove successful.

For at least the foregoing reasons, Applicant submits that the Examiner has failed to establish a *prima facie* case of obviousness with respect to claims 13-15, 18 and 21, and such rejection should accordingly be withdrawn.

d. rejection of claims 16-17 and 19-21 under 35 U.S.C. § 103(a)

The Examiner has rejected claims 16-17 and 19-21 under 35 U.S.C. § 103 as being unpatentable over *Bedair* in view of what the Examiner has characterized as “admitted prior art” and further in view of *McDermott*. While the Examiner has not, in this rejection, specified what is purported to be disclosed in *Bedair*, Applicant presently understands that the rejection of claims 16-17 and 19-21 is based, in part, upon the prior assertion of the Examiner in the Office Action that *Bedair* discloses “in Fig. 2 a tunnel junction including GaAs(1-x)Sb_x 203 (col. 7, l. 16-17).”

By virtue of their dependence from independent claim 13, dependent claims 16-17 and 19-21, each require, among other things, “a tunnel junction [that] includes GaAs_(1-x)Sb_x.” As discussed above in connection with independent claims 1 and 8 however, the Examiner has failed to establish that *Bedair* teaches or suggests the particular claimed relation of As (1-x) to Sb (x) in a tunnel junction. Inasmuch as the rejection of claims 16-17 and 19-21 relies on the inaccurate characterization of *Bedair* advanced by the Examiner, that rejection lacks an adequate foundation. Particularly, even if *Bedair*, *McDermott* and the purported “admitted prior art” are combined in the purportedly obvious fashion, the resulting combination fails to include all the limitations of claims 16-17 and 19-21.

Moreover, it is not at all clear that one of skill in the art would be motivated to combine the purported reference teachings, in view of the disparate technologies represented by the cited references. Particularly, the purported “admitted prior art” is concerned with vertical cavity surface emitting lasers, while *McDermott* is directed to bipolar transistors, and *Bedair* is concerned with solar cells (see Abstract). Further, the

Examiner has not established that there is a reasonable expectation that the purportedly obvious combination of aspects of the aforementioned VCSEL, *McDermott* bipolar transistor and *Bedair* solar cell would even prove successful.

For at least the foregoing reasons, Applicant submits that the Examiner has failed to establish a *prima facie* case of obviousness with respect to claims 16-17 and 19-21, and such rejection should accordingly be withdrawn.

III. Power of attorney

Applicant notes that the Office Action erroneously recites docket number "V637-02992 US." As to such docket number, Applicant respectfully directs the attention of the Examiner to the fact that a Revocation and Substitute Power of Attorney, vesting power of attorney in the attorneys associated with Customer No. 022913, has been filed in this case. As indicated in the aforementioned Revocation and Substitute Power of Attorney, the attorney docket number for this case is now 15436.438.1. *Effective immediately*, please update all applicable USPTO records to indicate the new docket number. Likewise, all future communications from the USPTO in this case should include the new docket number.

CONCLUSION

In view of the amendments and remarks submitted herein, Applicant respectfully submits that each of the pending claims 1-21 is now in condition for immediate allowance. Therefore, reconsideration of the rejections is requested and allowance of these claims is respectfully solicited. In the event that the Examiner finds any remaining impediment to a prompt allowance of this application that could be clarified in a telephonic interview, the Examiner is respectfully requested to initiate the same with the undersigned attorney.

Dated this 26th day of September, 2005.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'P. F. Malek Jr.', written over a horizontal line.

PETER F. MALEK JR.
Attorney for Applicant
Registration No. 45,576
Customer No.: 022913
Telephone No. (801) 533-9800